

Flight Scientist Report
Tuesday 03/22/2022 ACTIVATE RF143

Flight Type: Statistical Survey Flight

Flight Route: TXKF DASER N3508/W06920 SKPPR ZIBUT ETMEY ATLIC KLF1

Special Notes: This is the second flight of the day returning to LaRC from Bermuda. Owing to lack of a functional power cart at Bermuda, some Falcon instruments needed extra time to stabilize to collect good data this flight like AMS and PICARRO.

King Air

Pilot report (Wusk):

Return leg from Bermuda to Langley. Depart Rwy 30, easy climb out and on course. Filed TXKF DASER SKPPR ZIBUT ATLIC KLF1. 3 sondes dropped during flight. HU took off after UC and did several spirals to help with coincidence. Headwinds of about 70 knots for most all of the flight at FL220. Visual Rwy 08. Arranged for US Custom and Border Protection to clear aircraft at Langley. Had sent updated ETA earlier in flight to 5 PM rather than 5:30 PM. CPB agents arrived at 4:45 and were there to quickly clear both aircraft. First time for Custom Clearance at LaRC. First flight fueled to 14,000 # to allow for headwinds. Landed with 1400#.

Flight scientist report (Shingler):

TXKF DASER SKPPR ZIBUT ATLIC KLF1

Took off 15min ahead of the HU25. Out to DASER: very scattered shallow cu with tops reaching 4kft, stable. Starting to see the decoupled aerosol layer seen in RF142 at about 5kft. Between DASER and SKPPR it looks like MBL is up to 4kft with a decoupled aerosol layer from 5.5-7kft with light scattering above up to 12kft. No cirrus so far. HU25 added a spiral from surface up to 12kft at point 35.15N/69.33W. Inbound from ZIBUT there are a lots of aerosol layers at various altitudes in here. Strongest at 17kft. HU25 adding another spiral near ETMEY.

4 SONDES

DASER

35.15N/69.33W (Spiral 1)

SKPPR

ETMEY (Spiral 2)

Falcon

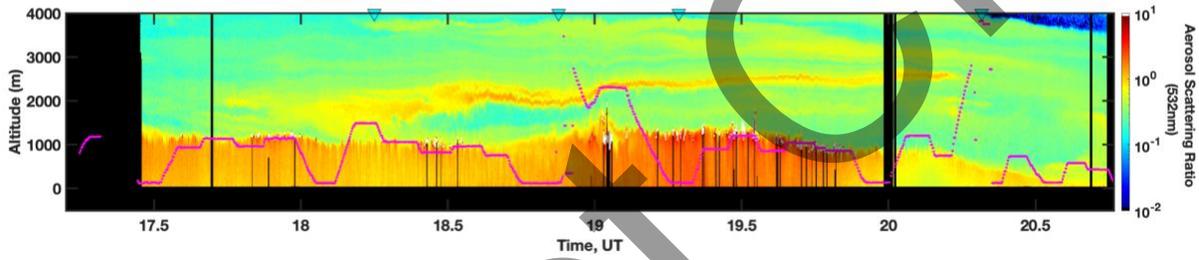
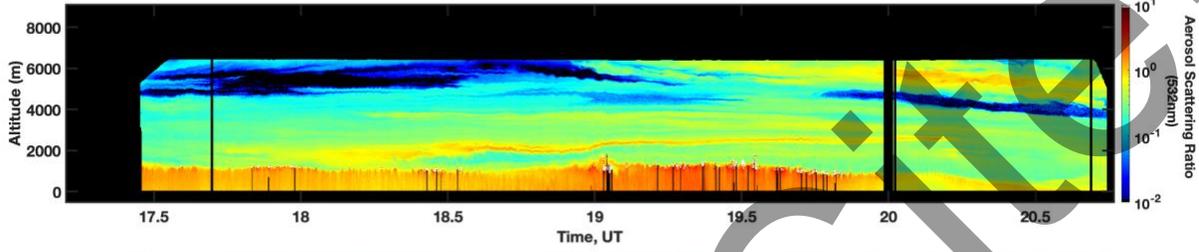
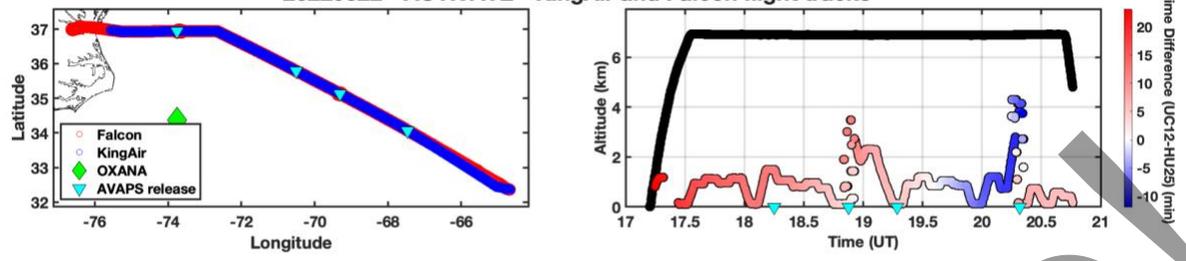
Pilot report (Slover):

ACTIVATE statistical survey flight on return from Bermuda. Due to strong headwinds, HU-25 took off about 20 min behind UC-12 and caught up prior to SKPPR. Route was TXKF DASER N3508/W06920 SKPPR ZIBUT ETMEY ATLIC KLFJ. Spirals were flown up to 12,000' at the N3508/W06920 and ETMEY points which kept the HU-25 coincident with the UC-12.

Flight scientist report (Crosbie):

Stat survey inbound from Bermuda with 2x spiral profiles. Some clouds were present along the flight track initially as shallow fair weather Cu but then later there were several more pronounced features organized in lines. The first line appeared as a region of more developed Cu along a convergence, while the second was crossed at an oblique angle with much of the line visible for some time to the right of track. This took the form of a visible airmass gradient with cloud bases visible descending. The cloud tops also descended in association with this region before clear conditions resumed. There were aerosol gradients in the marine boundary layer associated with these lines. It appeared that there was more organic aerosol than the morning flight in this region. The sulfate also was slightly enhanced in the region close to these lines then decreased further to the NW. 2 Spiral modules were performed to reduce the spacing with the UC12. The first was in the clear region before the first line and included a significant aerosol layer 6-8kft. This layer was subsequently sampled on the descent although the peak of the layer had increased in altitude to 7800ft. The layer was also more compact. The second spiral was performed near the edge of the cirrus inbound from ZIBUT. The aerosol layer in the FT was now more diffuse but there was aerosol extending up to the top of the spiral at 14500ft. Near this location the MBL decreased quite significantly presumably in connection with the lower SST.

20220322 - ACTIVATE - KingAir and Falcon flight tracks



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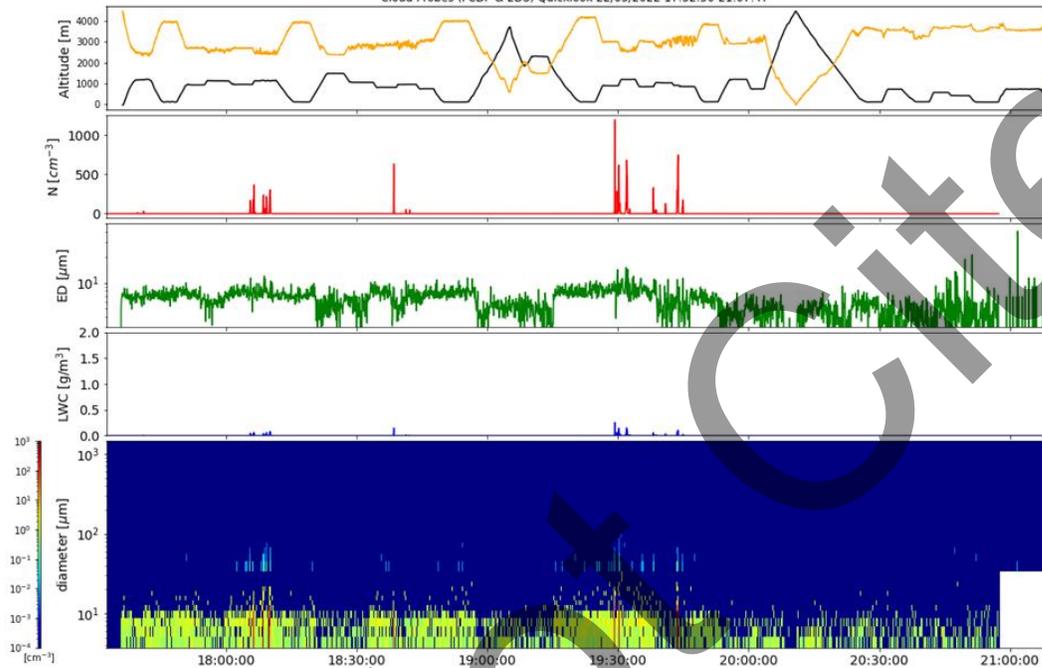
Quicklook ACTIVATE Cloud Probes (FCDP & 2DS) Quicklook

preliminary data, only for quicklook use

Simon Kirschler, Christiane Voigt, Richard Moore, Ewan Crosbie



Cloud Probes (FCDP & 2DS) Quicklook 22/03/2022 17:32:36-21:07:47



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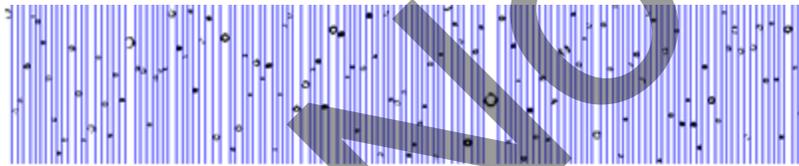
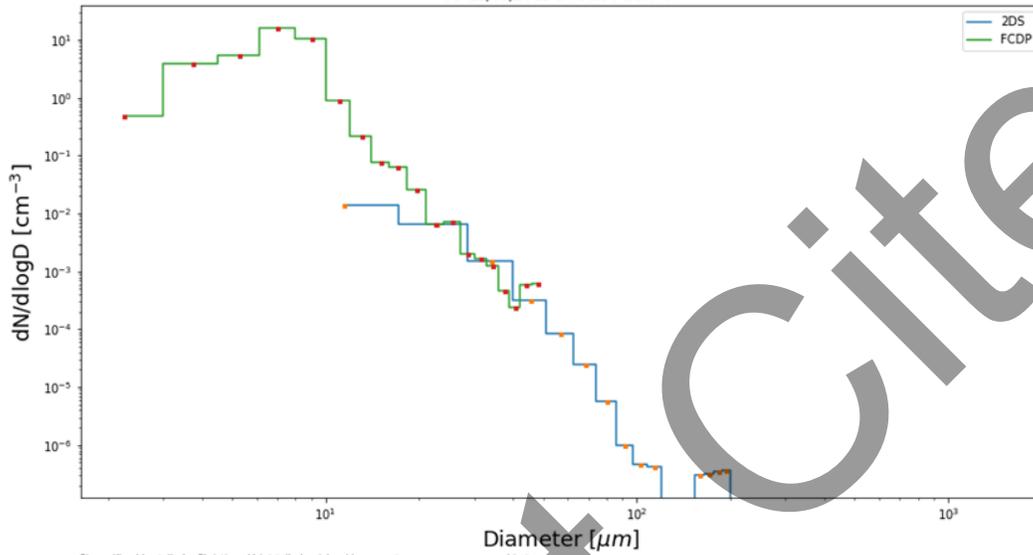
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PSD ACTIVATE

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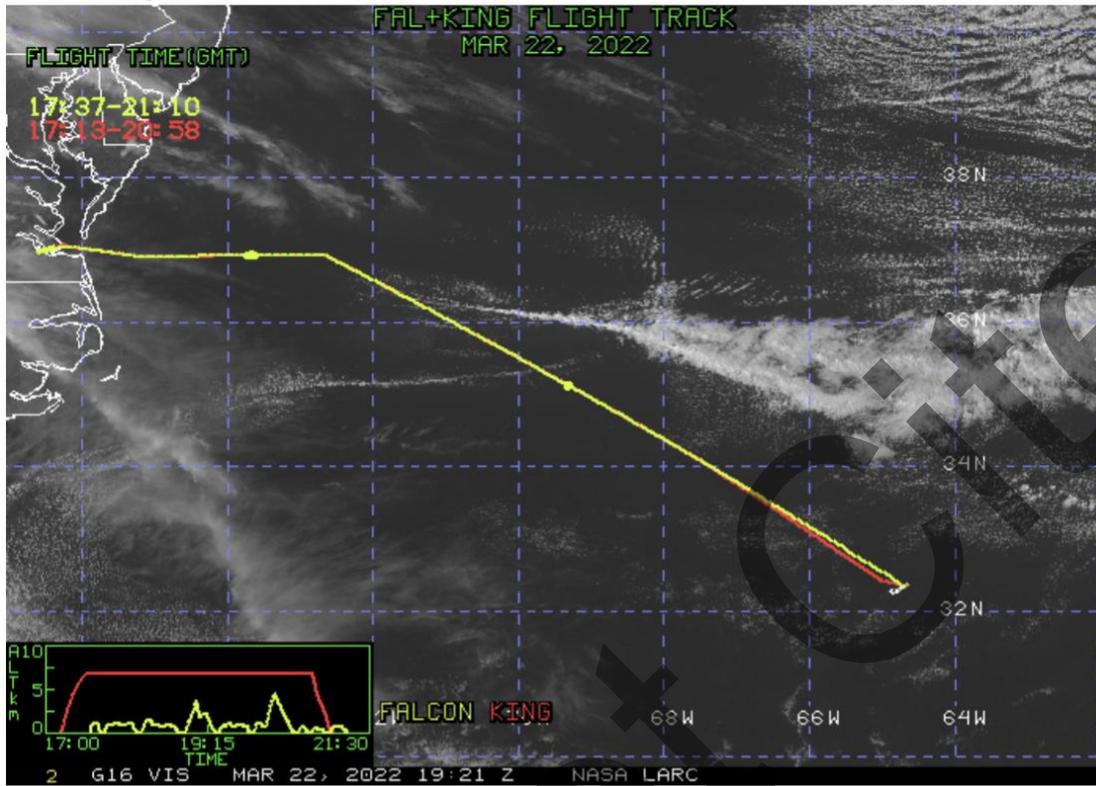


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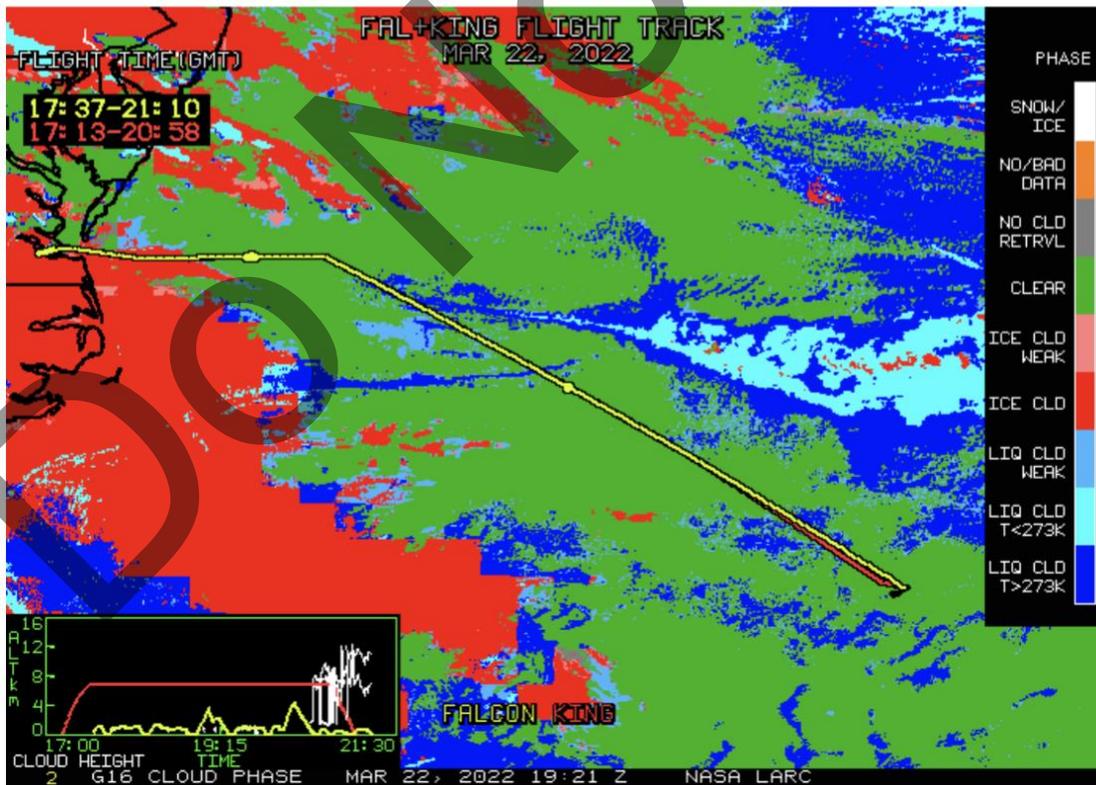


Very rare pure liquid clouds with **no** Precip.

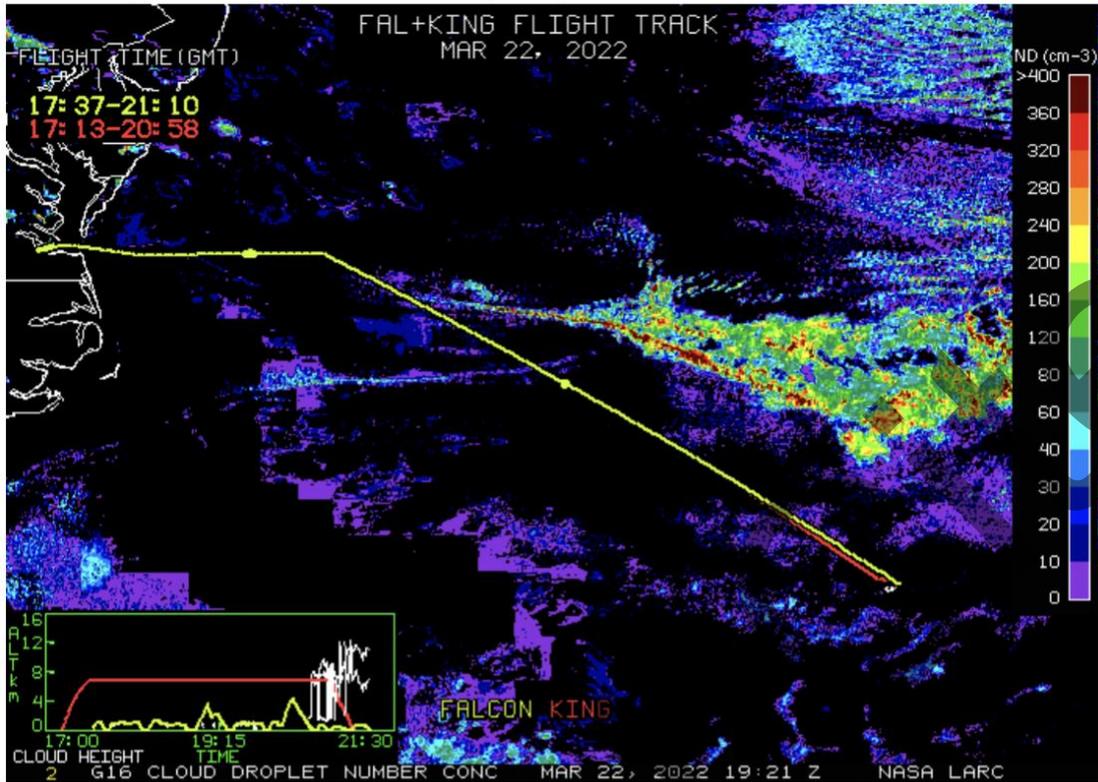
NASA-LaRC Clouds Group GOES-16 Quicklook Images for Flight 143, 19:21 UTC Mar 22, 2022
Visible Image



Cloud Phase



Cloud Droplet Number Concentration (cm-3)



Cloud-Top Height (Kft-ASL)

